UTTARAKHAND STATE COUNCIL FOR SCIENCE & TECHNOLOGY
(GOVT. OF UTTARAKHAND)
DEHRADUN- 248007

PROFORMA FOR SUBMISSION OF R&D
AND DEMONSTRATION PROJECTS IN THE IDENTIFIED AREAS
(Only the Online Mode of Application Will Be Accepted on Call Basis)

PART I: GENERAL INFORMATION

1. Project Title: AI-Driven Analytical System for Response of Women on Health Care Issues – Maternal Care and Nutrition in Uttarakhand Hills, Tehri District
2. Name of the Institute/University/Organization : Swami Rama Himalayan University
3. Status of the Institute: Private
4. Name and designation of the Executive Authority of the Institute / University forwarding the application: Dr. Pramod Kumar, Dean, School of Science & Technology, Swami Rama Himalayan University
5. Category of the Project
    (R&D; Demonstration; Other) : R&D
6. Specific Area: Women's Health, Maternal Care, Nutrition, AI/ML for Public Health Analytics
7. Duration: _____2_____ Years _____0_____ Months
8. Total Cost (Rs.) _3,60,000_____
9. Is the project Single Institutional or Multiple-Institutional: Single Institutional
10. If the project is multi-institutional, please furnish the following: **NA**

11. Project Summary
The proposed project aims to develop an AI-driven analytical platform for evaluating the responses and experiences of women in the Tehri district regarding maternal health and nutrition services. The system will process data collected from 200 women across remote and semi-urban regions using Natural Language Processing (NLP) and sentiment analytics. The findings will help understand ground realities, inform local health planning, and lay the foundation for a scalable decision-support system in the hill regions.

Project Summary

The proposed research project aims to develop an **AI-driven analytical platform** to evaluate the responses and experiences of women regarding maternal health and nutrition services in the Tehri district of Uttarakhand. By leveraging **Natural Language Processing (NLP)** and **sentiment analysis** techniques, the system will analyze qualitative data collected from **200 women** residing in both remote and semi-urban areas of the district.

This platform will capture women's perceptions, challenges, and satisfaction levels with services such as antenatal care, institutional delivery, postnatal support, and nutritional supplementation. The goal is to uncover ground-level insights that are often missed in conventional reporting mechanisms.

The outcomes of the study will contribute to evidence-based local health planning, policy alignment, and service delivery improvements. Furthermore, the project will lay the groundwork for a **scalable AI-based decision-support system** that can be adapted to other hilly regions of Uttarakhand and similar geographies across India.

PART II: PARTICULARS OF INVESTIGATORS

12. Name: Dr. Anupama Mishra

    Principal Investigator (the project shall not be considered in the absence of the PI)

    Date of Birth: 01-09-1982   Sex: _Female

    Designation: Assistant Professor

    Department: Computer Science & Engineering

    Institute/University: Swami Rama Himalayan University

    Address: Department of Computer Science & Engineering

    PIN: 248140

    Mobile/ Tel.: _9639601234

    e-mail: _anupamamishra@srhu.edu.in_____

    No. of Projects being handled at present: 01

13. Name: Ms. Neelam Danu

    Co-Principal Investigator (project shall not be considered in the absence of Co-PI)

    Date of Birth: _30-08-1983   Sex: Female

    Indicate whether Principal Investigator/Co-Investigator:

    Designation: Assistant Professor

    Department: Applied Science and Humanities

    Institute/University: Swami Rama Himalayan University

    Address: Department of Applied Science & Humanities

    PIN: 248140

    Mobile/ Tel.: __9760087270

    e-mail : __neelamdanu@srhu.edu.in_____

    No. of Projects being handled at present : 01

PART III : TECHNICAL DETAILS OF PROJECT

14. Introduction

14.1 Origin of the proposal

The healthcare ecosystem in India's hilly regions, especially within the Uttarakhand hills, is burdened by unique challenges stemming from geographic remoteness, fragmented infrastructure, and socio-economic disparities. Among these regions, Tehri district stands out for its steep terrain, limited connectivity, and scattered population, which together impede consistent access to maternal and nutritional healthcare services. This study, under our project initiative, will focus specifically on Tehri to analyze women's real-world experiences, accessibility issues, and levels of satisfaction with current healthcare provisions.

By utilizing AI-based sentiment and text analytics on feedback collected from these areas, the project seeks to generate data-driven insights that reflect the local realities and help inform targeted health planning and interventions for women in this hilly region.

14.2 Definition of the problem

Women in the hilly regions of Uttarakhand face persistent challenges in accessing adequate maternal healthcare and nutritional support. The difficult terrain, poor connectivity, and limited health infrastructure significantly hinder the delivery and utilization of essential services such as antenatal care, institutional deliveries, postnatal support, and nutritional supplementation. These challenges contribute to adverse health outcomes, including high rates of anemia, malnutrition, and maternal morbidity.

Although multiple government programs aim to improve maternal and nutritional health, the absence of a reliable and dynamic system to capture women's real-time feedback on these services results in a critical information gap. Without localized insights, policymakers and health administrators struggle to align interventions with the actual needs and experiences of the population.

This research seeks to address this gap by developing an **AI-driven analytical system** to analyze women's responses regarding maternal care and nutrition. By applying sentiment analysis and natural language processing (NLP) techniques to collect and interpret feedback, the study aims to generate actionable insights that can enhance targeted health interventions. The **Tehri district** has been selected as the study area due to its unique geographical challenges, which make it a representative and relevant case for understanding the broader healthcare access issues in Uttarakhand's hilly regions.

14.3 Objectives

1. **To assess the experiences and perceptions of women in the Tehri district regarding maternal healthcare and nutritional services** through qualitative responses gathered from remote and semi-urban areas.
2. **To develop and implement an AI-driven analytical system using Natural Language Processing (NLP) and sentiment analysis** for interpreting women's feedback on maternal care and nutrition.
3. **To generate data-driven insights for improving health service delivery and supporting local decision-making**, with the long-term aim of creating a scalable model for similar hilly regions across Uttarakhand.

15. **Review of Current Status of research and development in the subject**
   15.1 International Status

AI-driven tools are being explored globally to enhance maternal health. For example, ARMMAN in India used phone-call–based AI to predict engagement and improve maternal outcomes, reducing dropouts by 13–7% using deep learning models

In low- and middle-income countries (LMICs), critical barriers—such as lack of awareness, access issues, resource constraints, and human resource shortages—have been widely documented through scoping reviews

15.2 National Status

In Uttarakhand, mixed-method studies highlight socio-economic and cultural determinants affecting maternal and infant health, illustrating challenges specific to hilly regions

Intervention-based research in rural Uttarakhand shows improvement in women's knowledge and practices regarding maternal and child health after targeted programs .

Studies also identify barriers to utilization of antenatal care, including service availability and cultural attitudes

15.3 Importance of the proposed project in the context of current status

While national and international research identifies systemic barriers, none integrate AI-driven sentiment and text analytics to capture women's lived experiences in hilly terrain. The project fills this gap by combining qualitative feedback with AI, offering localized, data-driven insights into maternal care and nutrition that conventional methods can't provide.

15.4 Anticipated Products & Processes of Practical/Technological utility /Socioeconomic relevance expected to be evolved by pursuing the project.

AI Analytical Dashboard: Aggregates sentiment data to show satisfaction trends and geographic disparities.

Feedback Heatmaps: Visualize clusters of issues (e.g., anemia, service shortages).

Policy Briefs: Recommendations for block-level health interventions.

15.5 Expertise available with the proposed investigating group / institution in the subject of the project.

Dr. Anupama Mishra (PI, CSE): Experienced in AI/ML
Neelam Danu(Co-PI); Experience in preparation of Questionnaire/Survey in hills

15.6 How this proposal is beneficial to the State.
Provides evidence-based local data to inform NHM and nutrition schemes in Tehri and similar hill districts.
Enhances quality & accessibility of maternal-nutrition services through real-time feedback loops.
Supports Uttarakhand's aim to reduce maternal mortality, anemia, and malnutrition via targeted interventions.
Demonstrates a low-cost, scalable AI solution adaptable to other hilly or remote regions.

16. **Work Plan**

16.1 Methodology

1. **Research Design:** A mixed-method approach will be employed, combining both qualitative and quantitative methods to offer a holistic understanding of the health care challenges faced by women.
2. **Sample Size:** The study will include 200 respondents ensuring representation from different age groups, socio-economic backgrounds, and geographical locations.
3. **Data Collection:**
    o **Surveys:** Structured questionnaires will be used to gather quantitative data on health care access, quality, and barriers from all 200 respondents.
    o Interviews: In-depth interviews will be conducted with a subset of participants to explore their experiences and perceptions in greater detail.
4. **Data Analysis:**
    o **Quantitative Data:** Descriptive and inferential statistics will be used to analyse the survey data, including measures of central tendency and variability, as well as correlation and regression analysis where applicable.
    o **Qualitative Data:** This study is based on collecting information through questionnaires and interviews. The questionnaire will be a set of written questions that the participants will answer, while the interviews will involve talking to people directly to get more detailed insights into their experiences and opinions. Both methods will help gather valuable information for the research.

16.2 Proprietary/patented items, if any, expected to be used for this project.

No proprietary or patented items are expected to be used in this project. All tools and frameworks for natural language processing, sentiment analysis, and data visualization will be open-source, including Python libraries (e.g., NLTK, TextBlob, HuggingFace Transformers) and visualization platforms (e.g., Power BI, Google Data Studio, Tableau Public).

16.3 Organisation of work elements

The project is divided into four key components:
Survey Design & Ethical Clearance: Preparation of tools (digital and printed) for data collection, translation to local language, and ethics approval.

Data Collection & Preprocessing: Field visits in Kirti Nagar and Narendra Nagar blocks to collect feedback from 200 women.

AI Analysis & Dashboard Development: Implementation of NLP-based sentiment analysis, keyword extraction, and geographic visualization.

Reporting & Policy Recommendations: Report generation, stakeholder workshops, and dissemination of findings to health departments and local bodies.

16.4 Suggested plan of action for utilisation of research outcome expected from the project.
Academic Use: Findings published in peer-reviewed journals and shared with AI & Public Health research communities.

16.5 Time schedule of activities giving milestones

S.N	Name of Milestone	Expected Start (Month/Year)	Address (Month/Year)
1	Survey Tool Design, Translation & Ethics Approval	Oct 2025	Mar 2026
2	Field Data Collection (200 samples)	Apr 2026	Sep 2026
3	A I/NLP Model Development & Dashboard Prototyping	Oct 2026	Mar 2027
4	Final Validation, Report Writing & Dissemination	Apr 2027	Sep 2027

16.6 Project implementing Agency/Agencies

Name of Agency	Address of Agency	Proposed Research Aspects	Proposed Amount	Cost Sharing %
Swami Rama Himalayan University (SRHU)	Jolly Grant, Dehradun, Uttarakhand – 248016	AI-based text analytics, sentiment analysis, data collection, dashboard development	₹3,60,000	100%

PART IV : BUDGET PARTICULARS

17. **Budget** (In Rupees)
A. **Non-Recurring (e.g. equipments, accessories, etc.)**

S.N	Item	Years	———	Total
1.	Tablet for data collection	1		₹50,000
2.	Cloud storage/backup device	1		₹30,000

B. **Recurring**
B.1 Manpower

S.N	Item	Quantity	Years	———	Total
1	Field Assistant	1	1		60,000

B.2 Consumables

S.N	Item	Years	———	Total
1	Printing survey forms	1		₹50,000
2	Stationery, batteries	1		₹30,000

Sub-Total (B.2) =

Other Items	years					Total
B.3 Travel	2					₹100,000
B.4 Contingency	2					₹30,000
B.5 Overhead Charges (if applicable)	2					₹10,000

Sub-Total (B=B.1+B.2 + B.3 + B.4 + B.5)=2,80,000/-
Grand Total (A + B)=(80,000+2,80,000)=3,60,000/-

Note :
Please give justification for each head and sub-head separately mentioned in the above table.
Financial Year : April - March
In case of multi-institutional project, the budget estimate to be given separately for each institution.

17.1- Justification:

A. Non-Recurring: Tablet for mobile survey data collection and on-site analysis.

Cloud backup or external drive for secure data storage.

B. Recurring:
B.1 Manpower: Field Assistant for community coordination, data collection support, and travel; Data entry operator for digital documentation and survey digitization.

B.2 Consumables: Printing of forms, health posters, and other stationery.

B.3 Travel: For visits to remote blocks for survey

B.4 Contingency: For unforeseen costs due to weather, local permissions, or tech failure.

B.5 Overhead Charges: Institutional overheads as per norms.

18.1- Designation of official empowered to receive financial grants:
Finance Officer, Swami Rama Himalayan University
    Account Details:
        Bank name & address: State Bank of India, HIHT, Jolly grant Dehradun
        Bank Account No:37200223663
        IFSC code: SBIN0010580
        PAN No: AAAJH0463L
        GST No.: **05AAAJH0463L1ZC**

Photocopy of the *Mandate Form* for RTGS/ NEFT transaction; from Account Section must be attached.
Photocopy of first page of the *Passbook*
Photocopy of the *Canceled Cheque*

18.2- (i)- Does this project require approval from Institutional Ethics Committee: **No**
      (ii)- If **yes,** then provide the Institutional Ethics Committee Certificate from competent authority

PART V : EXISTING FACILITIES

19. Available equipment and accessories to be utilized for the project :

S.No	Name of equipment/ accessories	Make	Model	Funding Agency	Year of Procurement
		NIL			

PART VI : DECLARATION/CERTIFICATION

It is certified that

(a) the research work proposed in the scheme/project does not in any way duplicate the work already done or being carried out elsewhere on the subject.

(b) the same project has not been submitted to any other agency/agencies for financial support.

(c) the emoluments for the manpower proposed are those admissible to persons of corresponding status employed in the institute/university.

(d) necessary provision for the scheme/project will be made in the Institute/University/State budget in anticipation of the sanction of the scheme/project.

(e) if the project involves the utilisation of genetically engineered organism, it is agreed that we will ensure that an application will be submitted through our Institutional Biosafety Committee and we will declare that while conducting experiments, the Biosafety Guidelines would be followed.

(f) if the project involves field trials/experiments/exchange of specimens, etc. we will ensure that ethical clearances would be taken from concerned ethical Committees/Competent authorities.

(g) it is agreed that any research outcome or intellectual property right(s) on the invention(s) arising out of the project shall be taken in accordance with the instructions of the Council.

(h) the institute/university agrees that the equipment, other basic facilities and such other administrative facilities as per terms and conditions of the grant will be extended to investigator(s) throughout the duration of the project.

(i) the Institute assumes to undertake the financial and other management responsibilities of the project.

Sign. with Seal of Executive Authority of
Institute/University
Date :
Signature of Principal Investigator :
Date :
Signature of Co-Investigator
Date :

PART VII : PROFORMA FOR BIODATA OF PROJECT COORDINATOR/PRINCIPAL INVESTIGATOR/COINVESTIGATORS

Name : Dr. Anupama Mishra
Designation : Assistant Professor
Department/Institute/University : Swami Rama Himalayan University
Date of Birth : 01/09/1982   Sex (M/F) : Female
SC/ST : NA

Education *(Post-Graduation onwards & Professional Career)*

S.N.	Institution Place	Degree Awarded	Year	Award / Prize / Certificate
1.	Dehradun	yes	2010	

Research Experience in various institutions *(if necessary, attach separate sheets).*
Publications *(Numbers only)* ....
Book chapter : _06_____
Research Papers,=34
Reports : _____   General articles : _____
Patents : 01 Granted , 03 Published
Others *(Please specify)* :

List of important publications

Project(s) submitted / being pursued / carried out by Investigator

S.N	Title of Project	Funding Agency	Duration From To	No. of Scientists/ Associates working under the projects	Total approved cost of the project (in Rs.)

Place : Dehradun
Date : 05-07-2025

Signature of Investigator(s)

PART VII : PROFORMA FOR BIODATA OF COINVESTIGATORS

Name : ___Neelam Danu
Designation : Assistant Professor
Department/Institute/University : Swami Rama Himalayan University
Date of Birth : 30/08/1983   Sex (M/F) : Female
SC/ST : NA

Education *(Post-Graduation onwards & Professional Career)*

S.N.	Institution Place	Degree Awarded	Year	Award / Prize / Certificate
1.	**Dehradun**	yes	2016	

Research Experience in various institutions (*if necessary, attach separate sheets*).

Publications (*Numbers only*) ....

Book chapter : _01_____
Research Papers,:03
Reports : _____   General articles : _____
Patents : _____   Others (*Please specify*) :

List of important publications

Project(s) submitted / being pursued / carried out by Investigator

S.N	Title of Project	Funding Agency	Duration From To	No. of Scientists/ Associates working under the projects	Total approved cost of the project (in Rs.)
1	Response of Women on Health Care Services in Uttarakhand Hills: A Study from Tehri District of Uttarakhand, India	Swami Rama Himalayan University	May,2025 to April,2026	1	1,12,000

Place : Dehradun
Date : 05-07-2025

Signature of Investigator(s)